

# Strategic Materials for Far-IR, CMB, and VISIR Kinetic Inductance Detectors

Completed Technology Project (2016 - 2018)



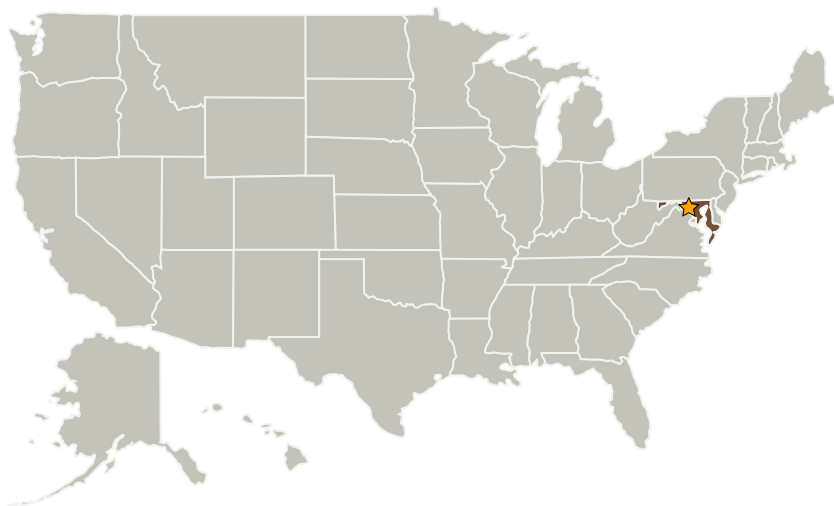
## Project Introduction

KIDs are photon detectors made of superconducting thin-film microwave resonators. They are an attractive technology for next-generation kilo-pixel detector arrays for future astrophysics missions since they can reach ultra-sensitive detection levels, and are intrinsically adapted to be read out in microwave frequency multiplexing schemes. Understanding the physics of these superconducting films and superconducting-dielectric systems is critical to achieving detector performance. Our objective is to complete materials characterization to demonstrate proof-of-concepts for KID designs required for future Far-Infrared (Far-IR), Cosmic Microwave Background (CMB) and Visible-to-Infrared (VISIR) space-flight instruments.

## Anticipated Benefits

This work will progress the technology readiness of detectors that are required for future Far-Infrared (Far-IR), Cosmic Microwave Background (CMB) and Visible-to-Infrared (VISIR) space-flight instruments.

## Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Goddard Space Flight Center (GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland



Microwave kinetic inductance detectors (KIDs) for materials characterization.

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## Primary U.S. Work Locations

Maryland

## Images



### Untitled Image 2

Microwave kinetic inductance detectors (KIDs) for materials characterization.

(<https://techport.nasa.gov/image/26433>)

## Project Website:

<http://aetd.gsfc.nasa.gov/>

## Organizational Responsibility

### Responsible Mission Directorate:

Mission Support Directorate (MSD)

### Lead Center / Facility:

Goddard Space Flight Center (GSFC)

### Responsible Program:

Center Independent Research & Development: GSFC IRAD

## Project Management

### Program Manager:

Peter M Hughes

### Project Managers:

Terence A Doiron  
Timothy D Beach

### Principal Investigator:

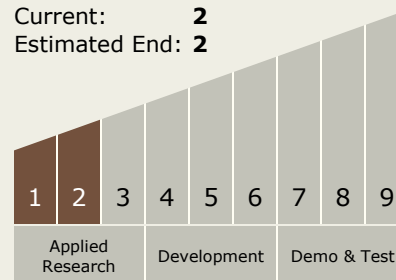
Emily M Barrentine

## Technology Maturity (TRL)

Start: 1

Current: 2

Estimated End: 2



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## Technology Areas

### Primary:

- TX08 Sensors and Instruments
  - └ TX08.1 Remote Sensing Instruments/Sensors
    - └ TX08.1.1 Detectors and Focal Planes

## Target Destination

Others Inside the Solar System